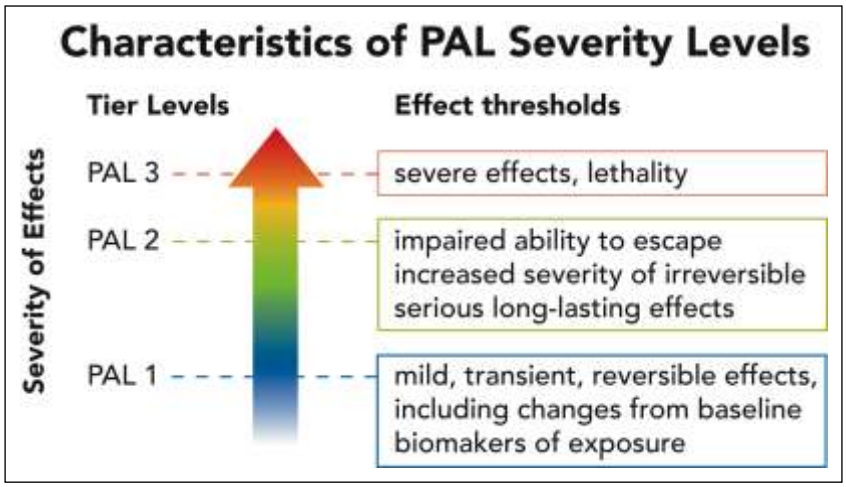
TECHNICAL BRIEF

Provisional Advisory Levels (PALs) for Hazardous Agents

Background

The Threat and Consequence Assessment Division (TCAD) of EPA's National Homeland Security Research Center (NHSRC) is responsible for developing risk-related tools, exposure models, and methodologies for health risk assessments. There is growing concern that people and places may become contaminated by hazardous substances as a result of a terrorist attack. However, there are no appropriate health-based guidance levels for re-entry (as might be needed after a large-scale disaster) or for resumed use of water resources. TCAD is therefore developing health-based provisional advisory level (PAL) values for high-priority chemical, biological, and radiological warfare agents in air and drinking water that will support risk-related decision making.



What Are PALs?

PALs are threshold exposure limits for the general public, including susceptible and sensitive subpopulations. This tiered set of values is used in conducting threat scenario health risk assessments and for developing risk-based cleanup levels that will assist with the return to normal operations.

The primary goals of TCAD's PAL program are to:

- Develop scientifically valid PAL values for use after terrorist or natural disaster incidents
- Provide health-based information for national emergency planning, preparedness, prevention, and response
- Support the development and implementation of consistent and effective national emergency program

PAL Development Process

PALs are developed for acute (24-hour), short-term (>1 to 30 days), and long-term (>30 days to 2 years) exposures to contaminated air and water. The three health-effect levels for defined exposure durations are PAL 1 (mild, transient, reversible effect), PAL 2 (serious, possibly irreversible effect), and PAL 3 (severe effect/lethality). The process for developing a PAL consists of the following main steps:

1. Identify chemicals of interest and evaluate their environmental fate and persistence.
2. Conduct a comprehensive literature search of published and unpublished toxicity data.
3. Assess toxicokinetic data, and identify target organs/systems and toxicodynamic information.

(more)

4. Identify key studies (including supporting studies) and their critical effect and point of departure (POD) values, which serve as the bases for deriving PAL values.
5. Calculate air and water concentrations (i.e., PALs) that correspond to target effect levels for adults and children.
6. Identify key uncertainties associated with toxicity information, and apply appropriate uncertainty and modifying factors.

Scientific Workgroup

NHSRC has established a Scientific Workgroup (SWG) to provide a comprehensive review of the PAL values and the rationale for their derivation. The SWG, which includes scientists in academia, federal and state agencies, industry, and the private sector, meets quarterly using a workshop format to evaluate and approve developed PALs.

PAL Users

The users of PAL values include emergency planners and responders, risk assessors, and on-scene coordinators.

For more information, visit the NHSRC Web site at www.epa.gov/nhsrc.

Technical Contact: Femi Adeshina (202) 564-1539, adeshina.femi@epa.gov

Kathy Nickel (513) 569-7955, nickel.kathy@epa.gov

June 29, 2006
EPA/600/S-06/015